SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

- **Product form**: Substance
- **Trade name**: TRIS HYDROCHLORIDE
- **CAS No**: 1185-53-1
- **Product code**: AB02005
- **Formula**: C4H11NO3.HCl
- **Synonyms**: 1,3-propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride / 2-amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride / alpha,alpha,alpha-tris(hydroxymethyl)aminomethane, hydrochloride / tris HCl / tris hydrochloride / tris(hydroxymethyl)amonimethane, hydrochloride / tromethamine, hydrochloride / tro

1.2. Relevant identified uses of the substance or mixture and uses advised against

- **Use of the substance/mixture**: Laboratory use/Manufacturing component/Research

1.3. Details of the supplier of the safety data sheet

AmericanBio, Inc.
15 Erie Dr.
Natick, MA 01760 - USA
T 800.443.0600 - F 508.655.2754
info@americanbio.com - www.americanbio.com

1.4. Emergency telephone number

- **Emergency number**: 855.835.2572 (U.S.) :: 760.602.8703 (Outside U.S.)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

**GHS-US classification**
Skin Irrit. 2 - H315
STOT SE 3 - H335

2.2. Label elements

**GHS-US labelling**

- **Hazard pictograms (GHS-US)**: ! [Exclamation mark]
- **Signal word (GHS-US)**: Warning
- **Hazard statements (GHS-US)**: H315 - Causes skin irritation
  H335 - May cause respiratory irritation
- **Precautionary statements (GHS-US)**: P261 - Avoid breathing fume, mist, vapours
  P264 - Wash clothing thoroughly after handling
  P271 - Use only outdoors or in a well-ventilated area
  P280 - Wear eye protection, protective clothing, protective gloves
  P302+P352 - IF ON SKIN: Wash with plenty of soap and water
  P304+P340 - IF INHALED: remove victim to fresh air and keep at rest in a position comfortable for breathing
  P312 - Call a POISON CENTER/doctor/physician if you feel unwell
  P321 - Specific treatment (see SECTION 4 on this label)
  P332+P313 - If skin irritation occurs: Get medical advice/attention
  P362 - Take off contaminated clothing and wash before reuse
  P403+P405 - Store in a well-ventilated place. Keep container tightly closed
  P405 - Store locked up
  P501 - Dispose of contents/container to Collect all waste in suitable and labelled containers and dispose according to local legislation
2.3. Other hazards
No additional information available

2.4. Unknown acute toxicity (GHS-US)
No data available

SECTION 3: Composition/information on ingredients

3.1. Substance

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRIS HYDROCHLORIDE</td>
<td>(CAS No) 1185-53-1</td>
<td>100</td>
<td>Skin Irr. 2, H315</td>
</tr>
<tr>
<td>(Main constituent)</td>
<td></td>
<td></td>
<td>STOT SE 3, H335</td>
</tr>
</tbody>
</table>

Full text of H-phrases: see section 16

3.2. Mixture
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures


First-aid measures after inhalation: Remove the victim into fresh air. Remove to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER/doctor/physician if you feel unwell.

First-aid measures after skin contact: Wash immediately with lots of water (15 minutes)/shower. Soap may be used. Do not apply (chemical) neutralizing agents. Wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical advice/attention. Specific treatment (see ... on this label).

First-aid measures after eye contact: Rinse immediately with plenty of water for 15 minutes. Take victim to an ophthalmologist. Do not apply neutralizing agents. Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persist.


4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation: Coughing. Irritation of the respiratory tract. Irritation of the nasal mucous membranes. May cause respiratory irritation.

Symptoms/injuries after skin contact: Tingling/irritation of the skin. Causes skin irritation.

Symptoms/injuries after eye contact: Irritation of the eye tissue.

Symptoms/injuries after ingestion: Irritation of the gastric/intestinal mucosa.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media


Unsuitable extinguishing media: No unsuitable extinguishing media known. Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard: DIRECT FIRE HAZARD. Not easily combustible. In finely divided state: increased fire hazard. INDIRECT FIRE HAZARD. Heating increases the fire hazard.

Explosion hazard: DIRECT EXPLOSION HAZARD. Fine dust is explosive with air. INDIRECT EXPLOSION HAZARD. Dust cloud can be ignited by a spark.

Reactivity: On heating/burning: release of toxic and corrosive gases/vapours (nitrous vapours, hydrogen chloride, carbon monoxide - carbon dioxide).

5.3. Advice for firefighters

Precautionary measures fire: Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.
TRIS HYDROCHLORIDE
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<table>
<thead>
<tr>
<th>Section 5: Firefighting instructions</th>
<th>Dilute toxic gases with water spray. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Avoid (reject) fire-fighting water to enter environment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection during firefighting</td>
<td>Heat/fire exposure: compressed air/oxygen apparatus. Heat/fire exposure: gas-tight suit. Do not enter fire area without proper protective equipment, including respiratory protection.</td>
</tr>
</tbody>
</table>

**SECTION 6: Accidental release measures**

**6.1. Personal precautions, protective equipment and emergency procedures**

**6.1.1. For non-emergency personnel**


**Emergency procedures**: Mark the danger area. Prevent dust cloud formation, e.g. by wetting. No naked flames. Wash contaminated clothes. Evacuate unnecessary personnel.

**Measures in case of dust release**: In case of dust production: keep upwind. Dust production: have neighbourhood close doors and windows. Dust production: stop engines and no smoking. In case of dust production: no naked flames or sparks. Dust: spark-/explosionproof appliances/lighting equipment.

**6.1.2. For emergency responders**

**Protective equipment**: Equip cleanup crew with proper protection.

**Emergency procedures**: Ventilate area.

**SECTION 7: Handling and storage**

**7.1. Precautions for safe handling**

**Precautions for safe handling**: Comply with the legal requirements. Clean contaminated clothing. Powdered form: no compressed air for pumping over spills.

**Hygiene measures**: Contaminated work clothing should not be allowed out of the workplace.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage conditions**: Keep only in the original container in a cool, well ventilated place away from: Keep container tightly closed.

**Incompatible products**: Strong bases. Strong acids.

**Incompatible materials**: Sources of ignition. Direct sunlight.

**Heat and ignition sources**: KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.

**Prohibitions on mixed storage**: KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) bases. combustible materials. organic materials.

**Storage area**: Store in a dry area. May be stored under nitrogen. Meet the legal requirements.

**Special rules on packaging**: SPECIAL REQUIREMENTS: hermetical. watertight. dry. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.

**Packaging materials**: SUITABLE MATERIAL: No data available. MATERIAL TO AVOID: No data available.

**7.3. Specific end use(s)**

No additional information available
SECTION 8: Exposure controls/personal protection

8.1. Control parameters
No additional information available

8.2. Exposure controls

<table>
<thead>
<tr>
<th>Protection</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal protective equipment</td>
<td>Avoid all unnecessary exposure.</td>
</tr>
<tr>
<td>Materials for protective clothing</td>
<td>GIVE GOOD RESISTANCE: rubber.</td>
</tr>
<tr>
<td>Hand protection</td>
<td>Gloves. Wear protective gloves.</td>
</tr>
<tr>
<td>Eye protection</td>
<td>Face shield. In case of dust production: protective goggles. Chemical goggles or safety glasses.</td>
</tr>
<tr>
<td>Respiratory protection</td>
<td>Dust production: dust mask with filter type P2. Wear appropriate mask.</td>
</tr>
<tr>
<td>Other information</td>
<td>Do not eat, drink or smoke during use.</td>
</tr>
</tbody>
</table>

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Crystalline solid.</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>157.60 g/mol</td>
</tr>
<tr>
<td>Colour</td>
<td>White.</td>
</tr>
<tr>
<td>Odour</td>
<td>Odourless.</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>3.5 - 5.0 (8 %)</td>
</tr>
<tr>
<td>pH solution</td>
<td>8 %</td>
</tr>
<tr>
<td>Relative evaporation rate (butylacetate=1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point</td>
<td>150 °C</td>
</tr>
<tr>
<td>Freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td>No data available</td>
</tr>
<tr>
<td>Self ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>150 °C</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapour density at 20 °C</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water.</td>
</tr>
<tr>
<td></td>
<td>Water: soluble</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Log Kow</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive limits</td>
<td>No data available</td>
</tr>
<tr>
<td>VOC content</td>
<td>0 %</td>
</tr>
<tr>
<td>Other properties</td>
<td>Translucent. Hygroscopic. Substance has acid reaction.</td>
</tr>
</tbody>
</table>

SECTION 10: Stability and reactivity

10.1. Reactivity

On heating/burning: release of toxic and corrosive gases/vapours (nitrous vapours, hydrogen chloride, carbon monoxide - carbon dioxide).

10.2. Chemical stability

Unstable on exposure to moisture. Not established.
10.3. Possibility of hazardous reactions
Not established.

10.4. Conditions to avoid
Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials
Strong acids. Strong bases.

10.6. Hazardous decomposition products

SECTION 11: Toxicological information

11.1. Information on toxicological effects

<table>
<thead>
<tr>
<th>Effect Type</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Causes skin irritation. pH: 3.5 - 5.0 (8 %)</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Not classified pH: 3.5 - 5.0 (8 %)</td>
</tr>
<tr>
<td>Respiratory or skin sensitisation</td>
<td>Not classified</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>May cause respiratory irritation.</td>
</tr>
<tr>
<td>Specific target organ toxicity (repeated exposure)</td>
<td>Not classified</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>Not classified</td>
</tr>
<tr>
<td>Potential Adverse human health effects and symptoms</td>
<td>Based on available data, the classification criteria are not met.</td>
</tr>
<tr>
<td>Symptoms/injuries after inhalation</td>
<td>Coughing. Irritation of the respiratory tract. Irritation of the nasal mucous membranes. May cause respiratory irritation.</td>
</tr>
<tr>
<td>Symptoms/injuries after skin contact</td>
<td>Tingling/irritation of the skin. Causes skin irritation.</td>
</tr>
<tr>
<td>Symptoms/injuries after eye contact</td>
<td>Irritation of the eye tissue.</td>
</tr>
<tr>
<td>Symptoms/injuries after ingestion</td>
<td>Irritation of the gastric/intestinal mucosa.</td>
</tr>
</tbody>
</table>

SECTION 12: Ecological information

12.1. Toxicity
Ecology - water : pH shift. Insufficient data available on ecotoxicity.

12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>Substance</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRIS HYDROCHLORIDE (1185-53-1)</td>
<td>Biodegradability in water: no data available. Not established.</td>
</tr>
</tbody>
</table>

12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Substance</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRIS HYDROCHLORIDE (1185-53-1)</td>
<td>No bioaccumulation data available. Not established.</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil
No additional information available

12.5. Other adverse effects
Other information : Avoid release to the environment.
SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations: Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Specific preliminary treatment. Remove to an incinerator for chlorinated waste materials with energy recovery. Dispose in a safe manner in accordance with local/national regulations.

Additional information: Hazardous waste according to Directive 2008/98/EC.

Ecology - waste materials: Avoid release to the environment.

SECTION 14: Transport information

In accordance with DOT

No dangerous good in sense of transport regulations

Additional information

Other information: No supplementary information available.

ADR

Transport document description: UN N/A N/A
Packing group (ADR): N/A
Hazard identification number (Kemler No.): N/A
Classification code (ADR): N/A

Transport by sea

No additional information available

Air transport

No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

TRIS HYDROCHLORIDE (1185-53-1)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Eye Irrit. 2 H319
STOT SE 3 H335
Skin Irrit. 2 H315

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC or 1999/45/EC

Xi; R36/37/38

Full text of R-phrases: see section 16

15.2. National regulations

No additional information available
15.3. US State regulations

No additional information available

SECTION 16: Other information

Other information : None.

Full text of H-phrases: see section 16:

<table>
<thead>
<tr>
<th>H-phrase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin Irrit. 2</td>
<td>Skin corrosion/irritation, Category 2</td>
</tr>
<tr>
<td>STOT SE 3</td>
<td>Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation</td>
</tr>
</tbody>
</table>

NFPA health hazard : 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.

NFPA fire hazard : 1 - Must be preheated before ignition can occur.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.

SDS US (GHS HazCom 2012)

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